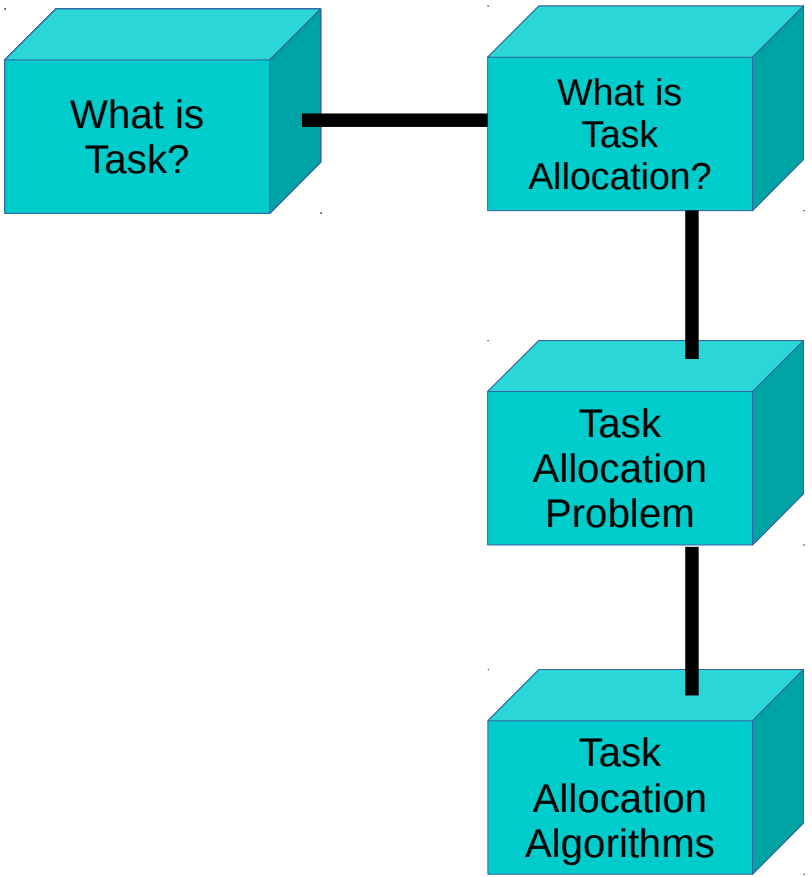
Task Allocation in Distributed Systems

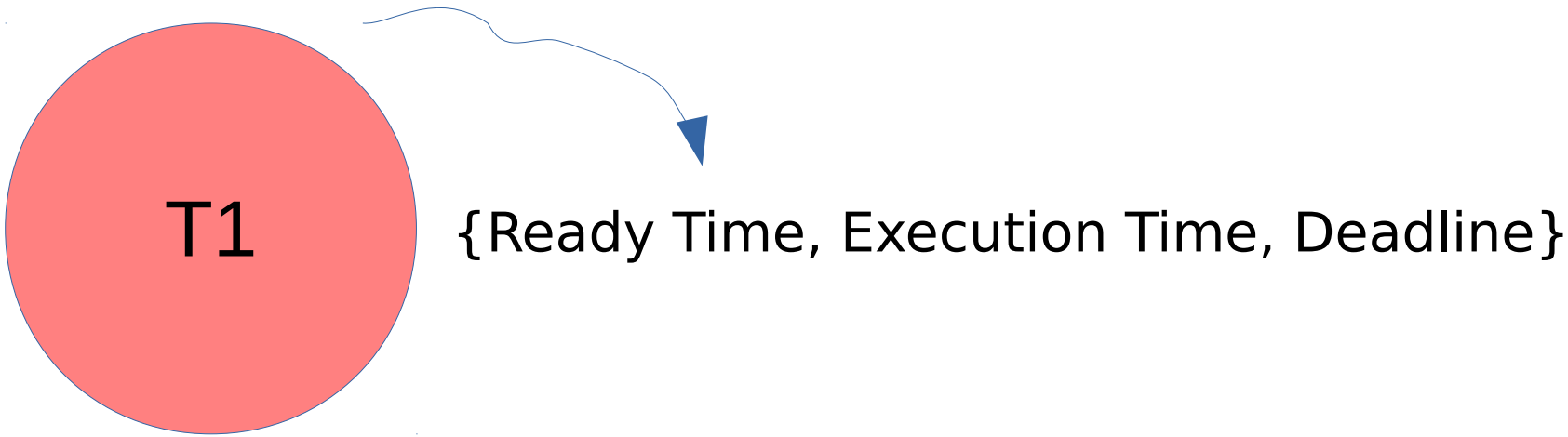
Outline


What is Task?
What is Task Allocation?
Task Allocation Problem
Task Allocation Algorithms


Albert Hubo

What is Task?

Task: It is a program or a part of a program in execution.

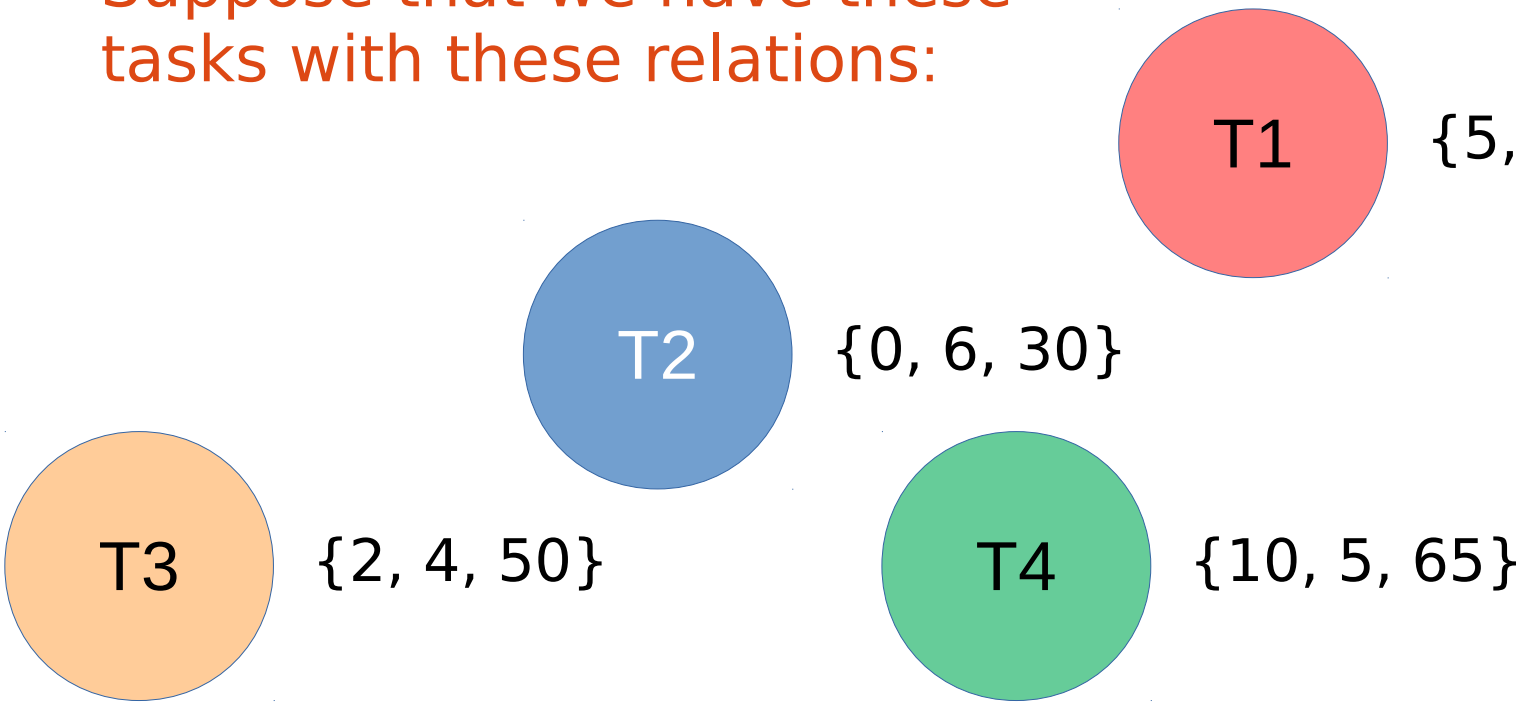


What is Task Allocation?

Task Allocation: To achieve a fast response time from such Distributed Systems, an efficient assignment of the application tasks to system processors is imperative.

What is Task Allocation?

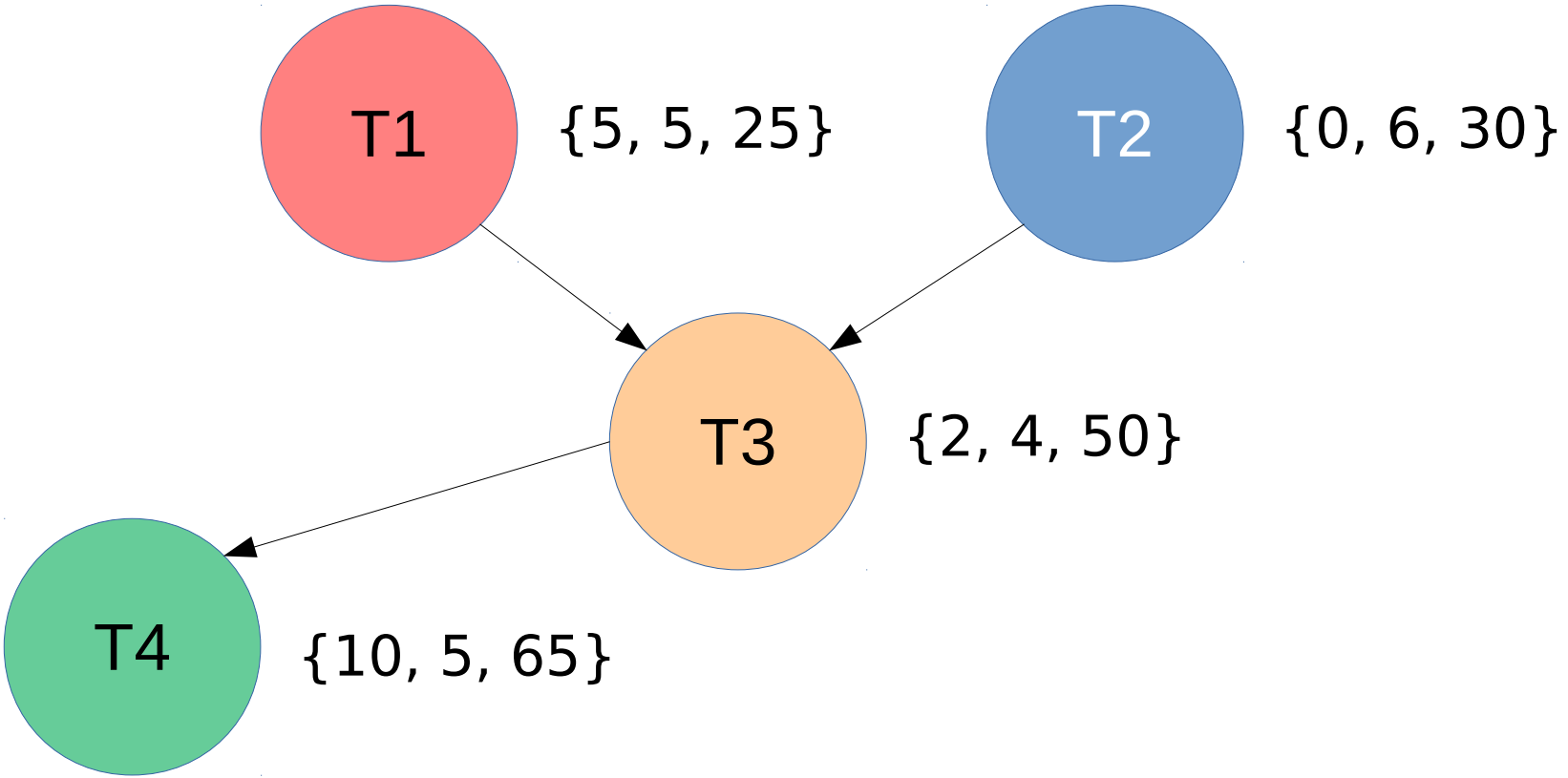
Suppose that we have these tasks with these relations:



Task 3 (T3) depends on both Task 1 (T1) and Task 2 (T2).
Task 4 depends on Task 3 (T3).

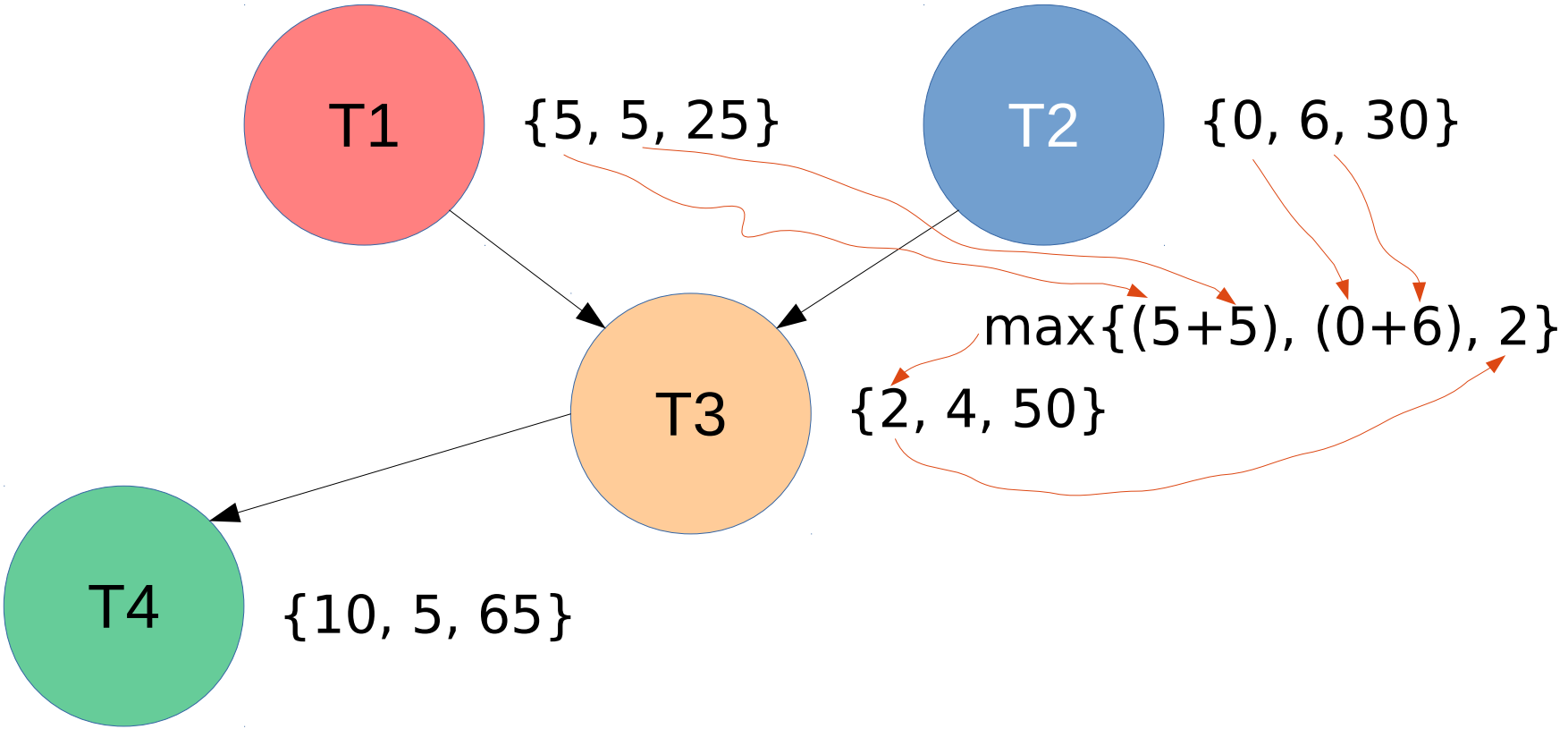
What is Task Allocation?

We draw the Task Graph:



What is Task Allocation?

We need to make some modifications:



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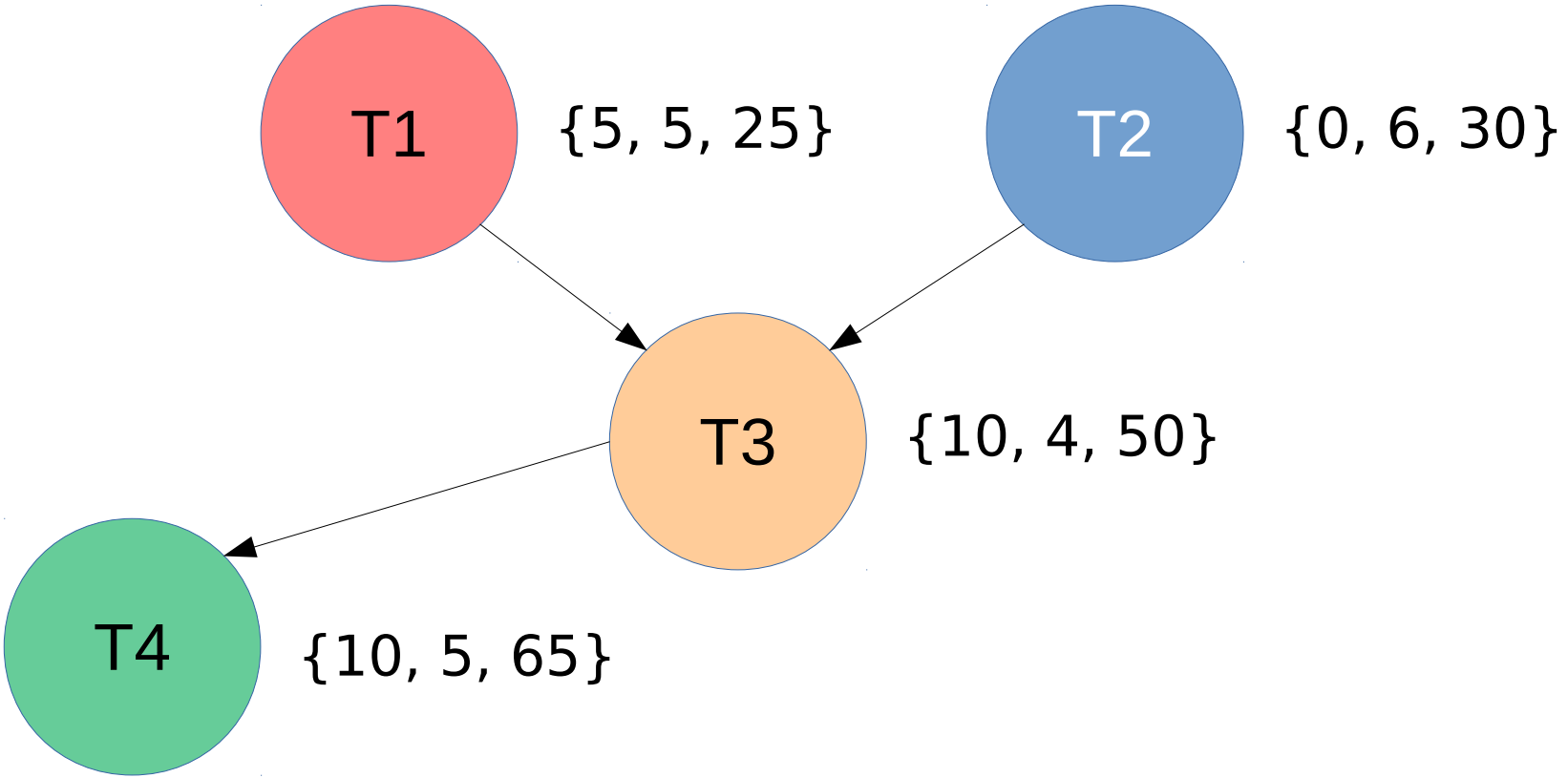

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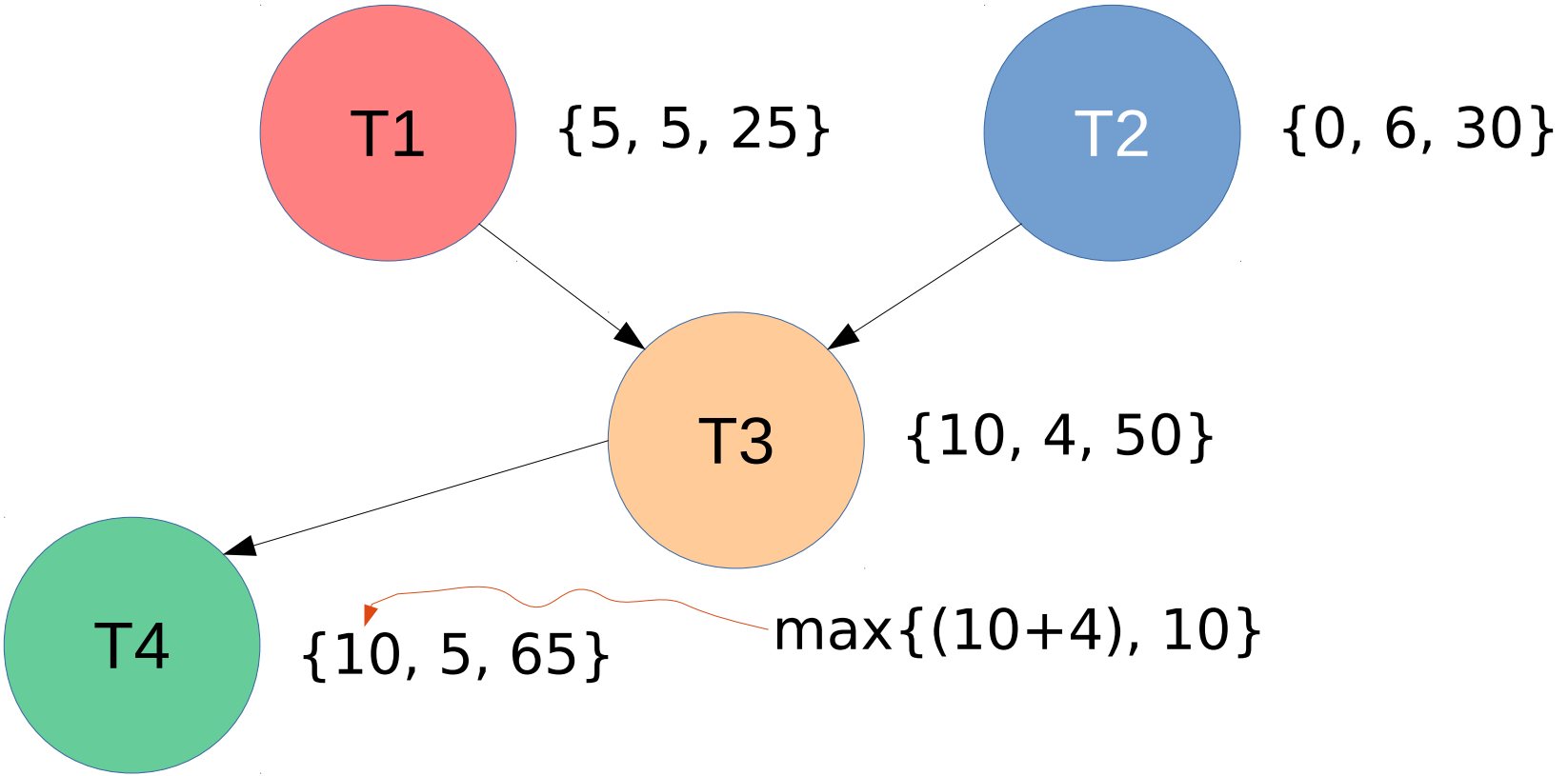

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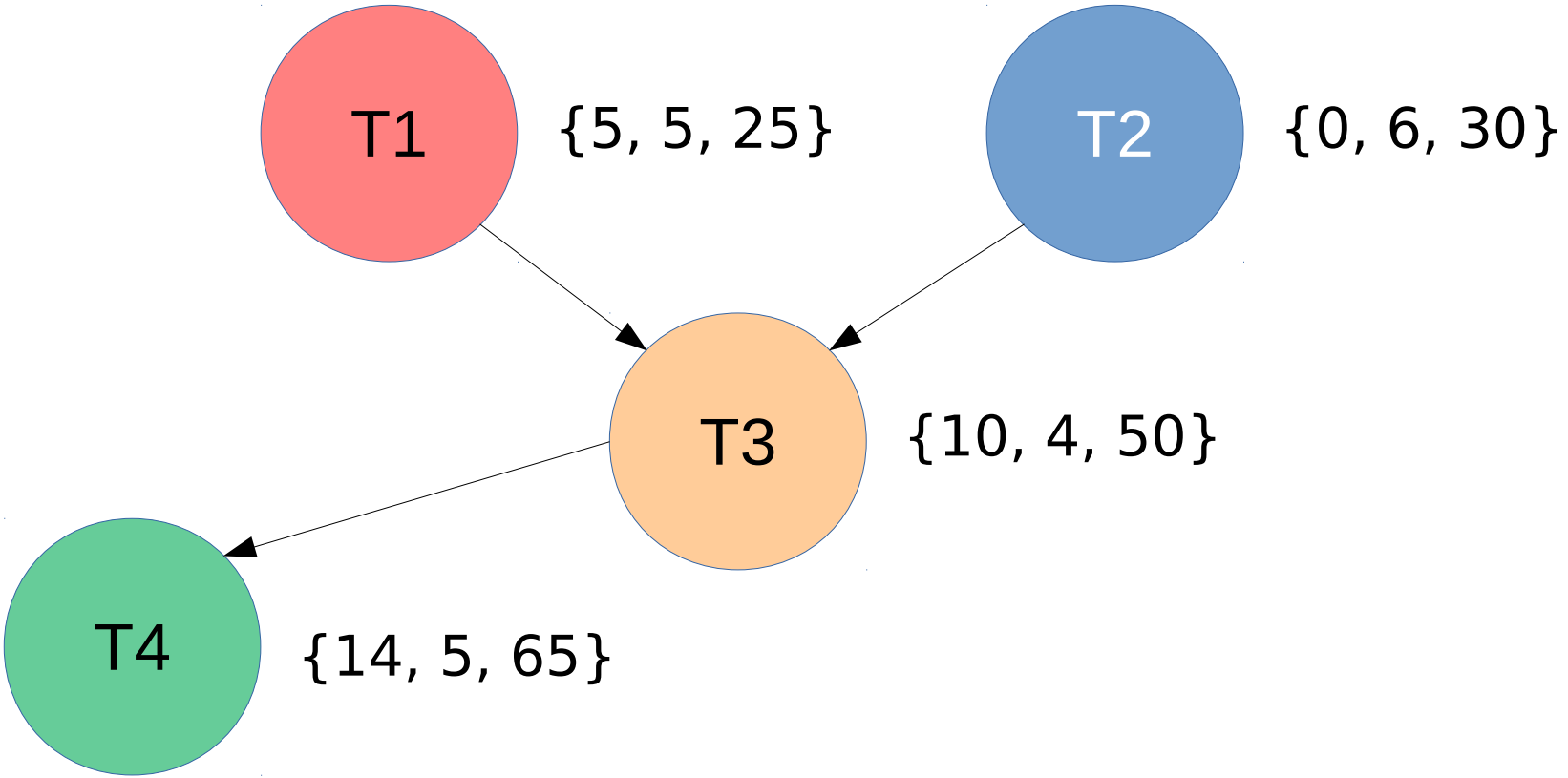
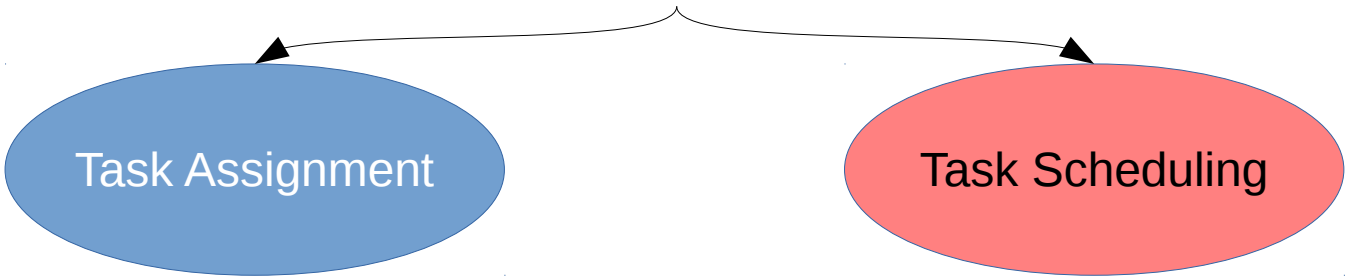


Task Allocation Problem



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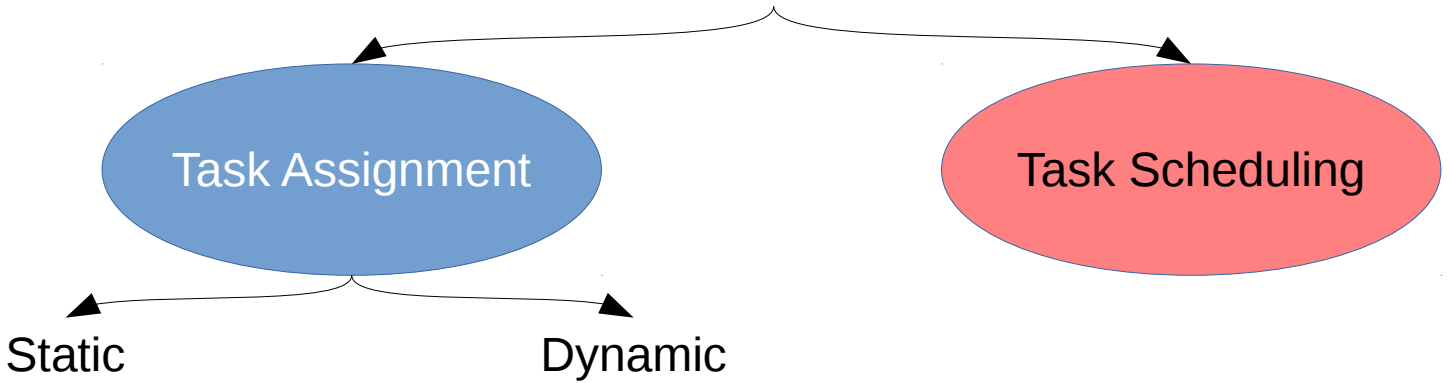

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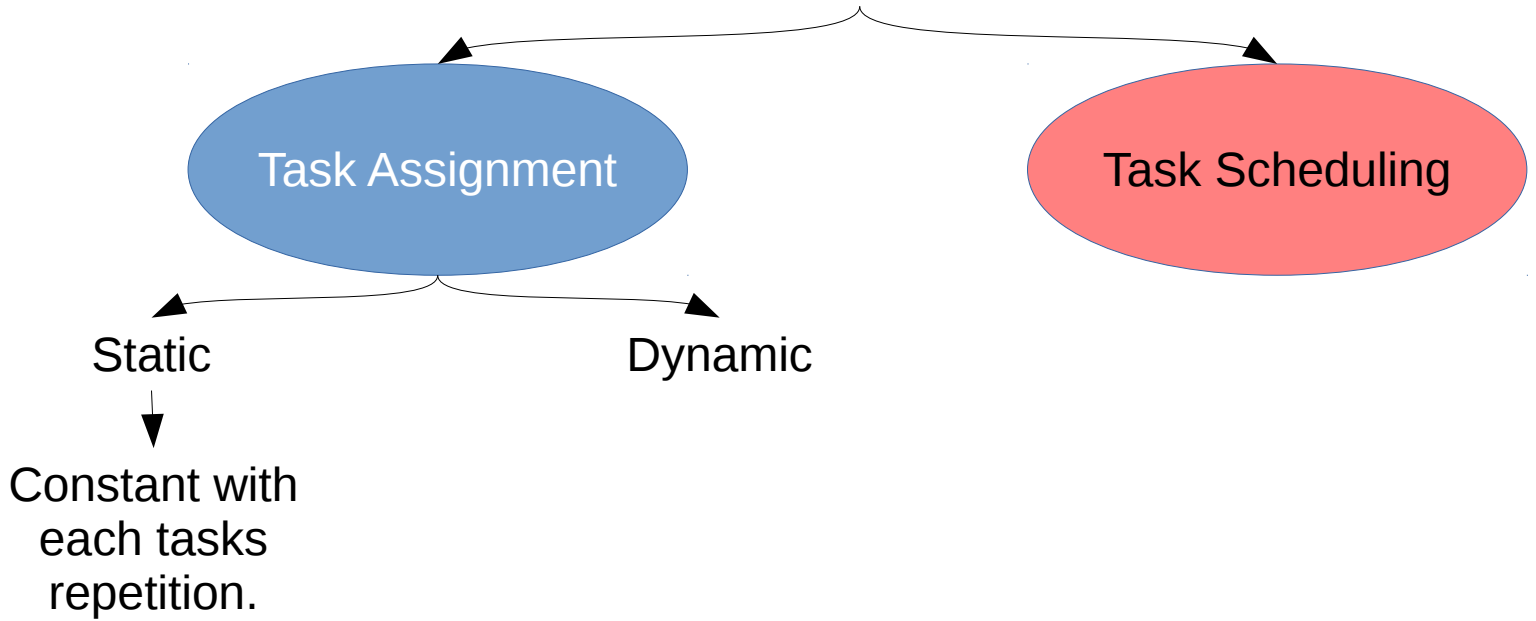

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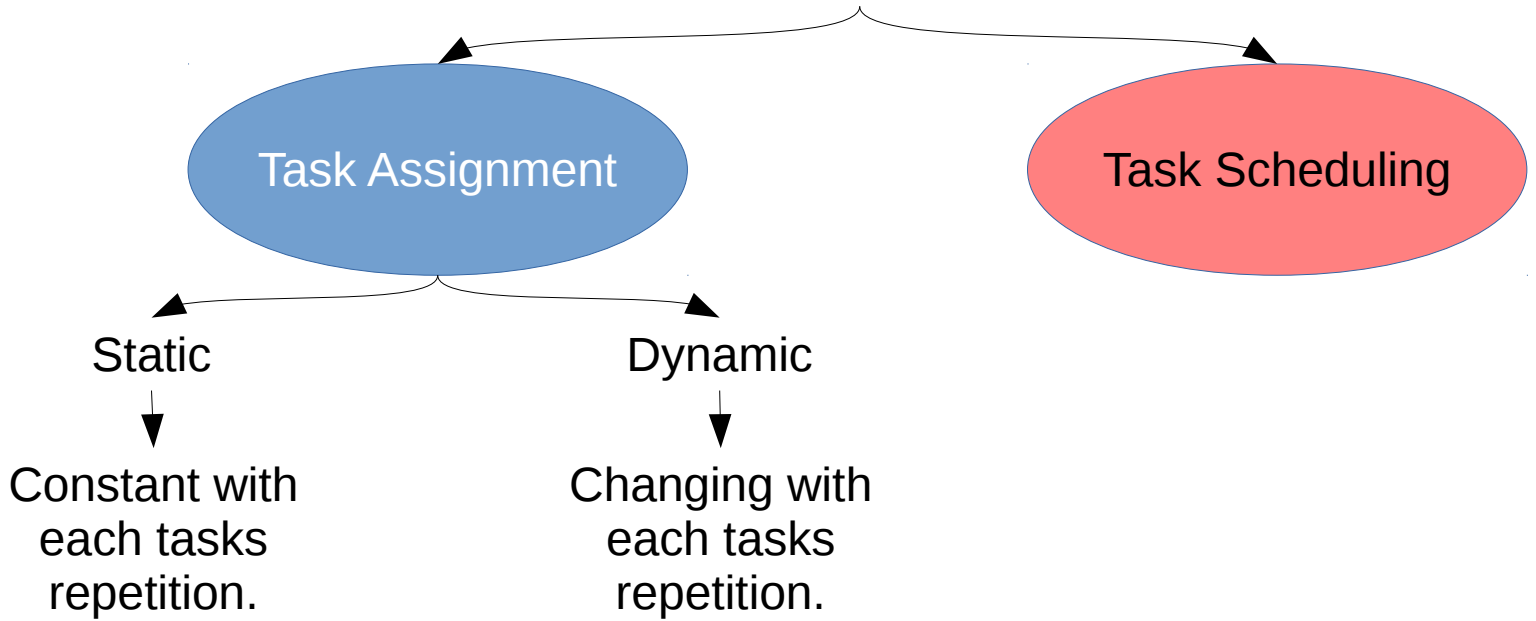

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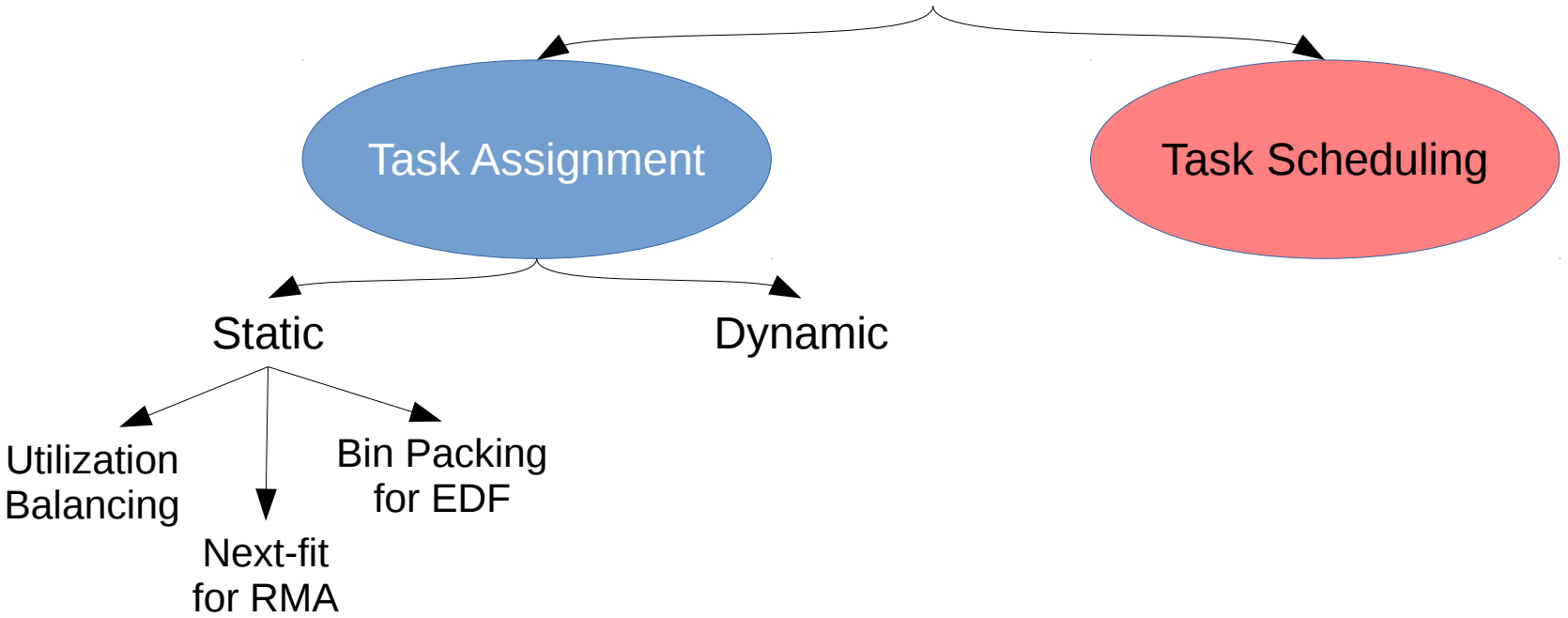

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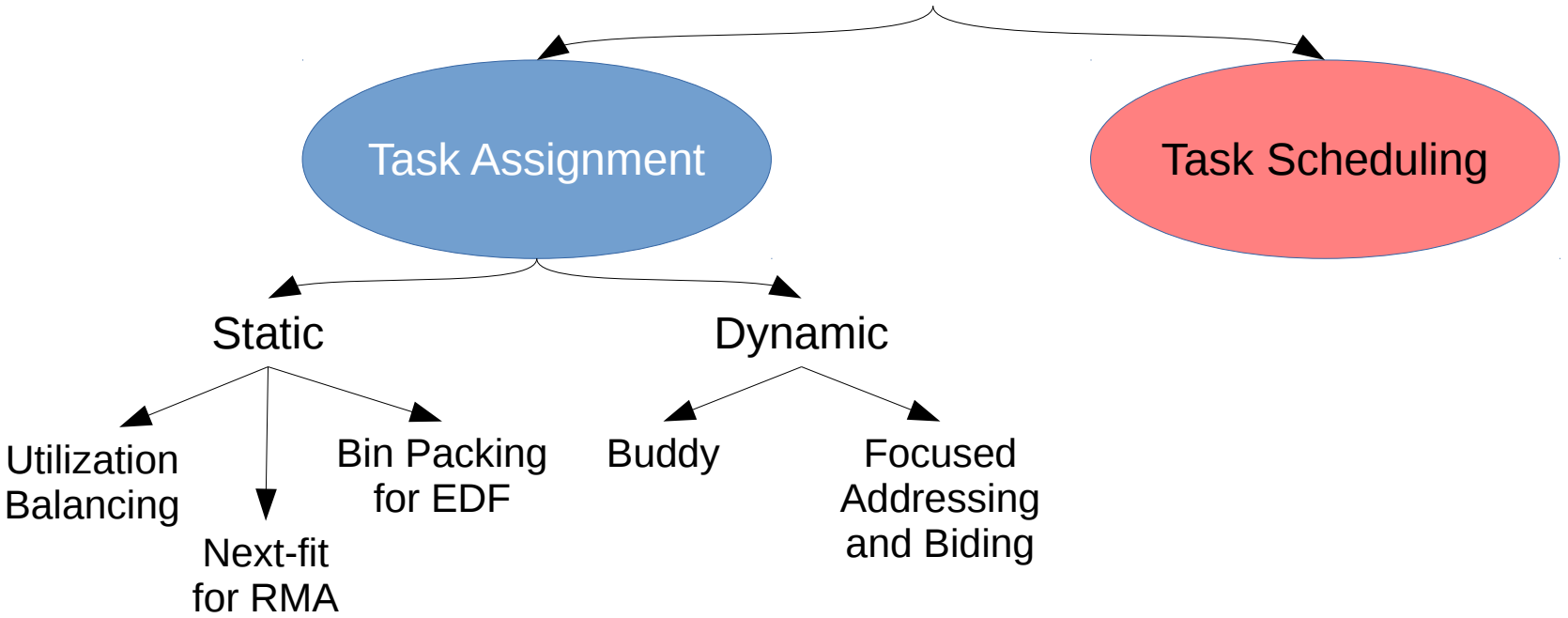

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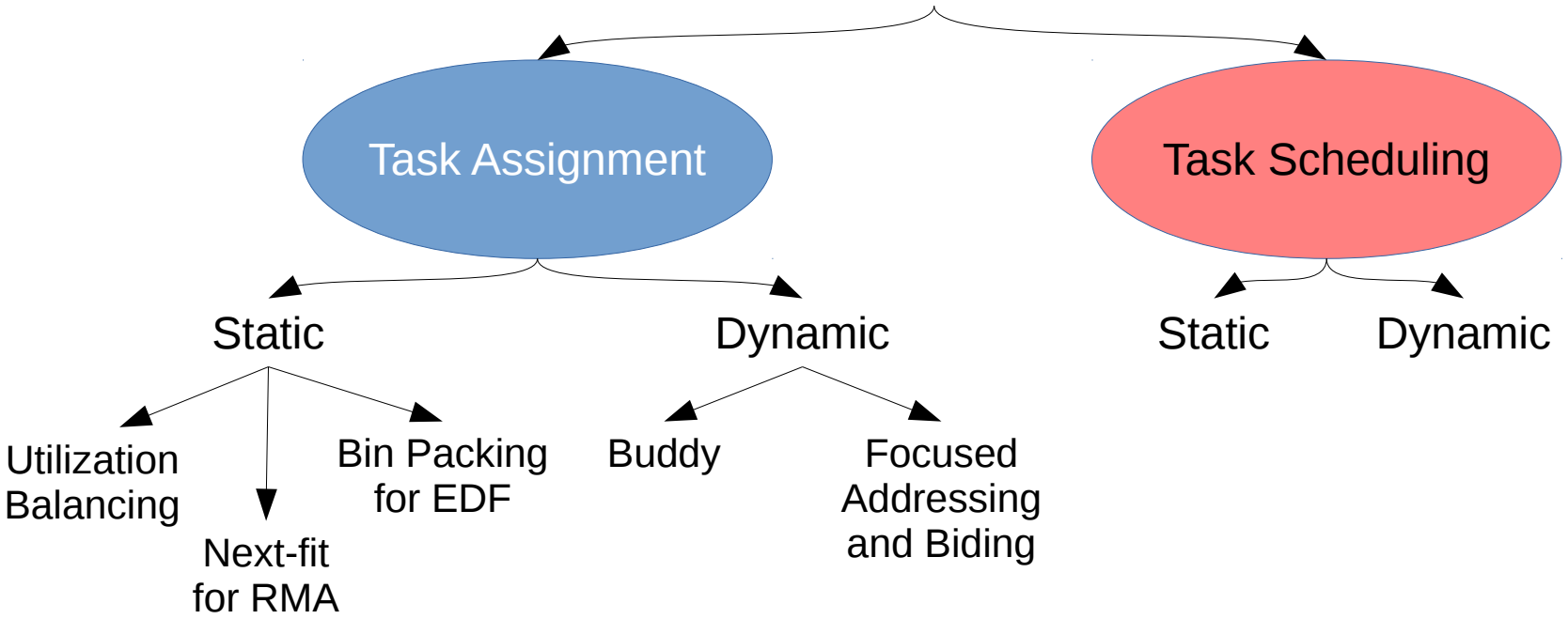

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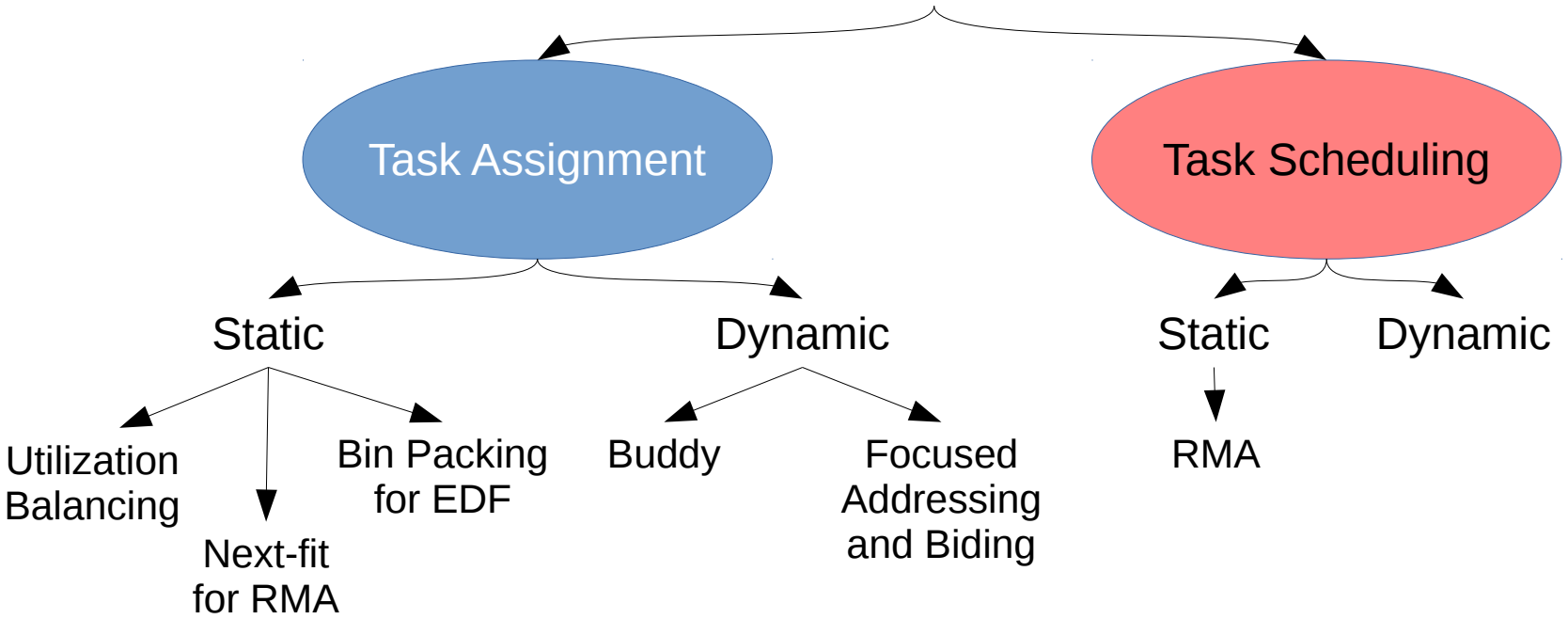

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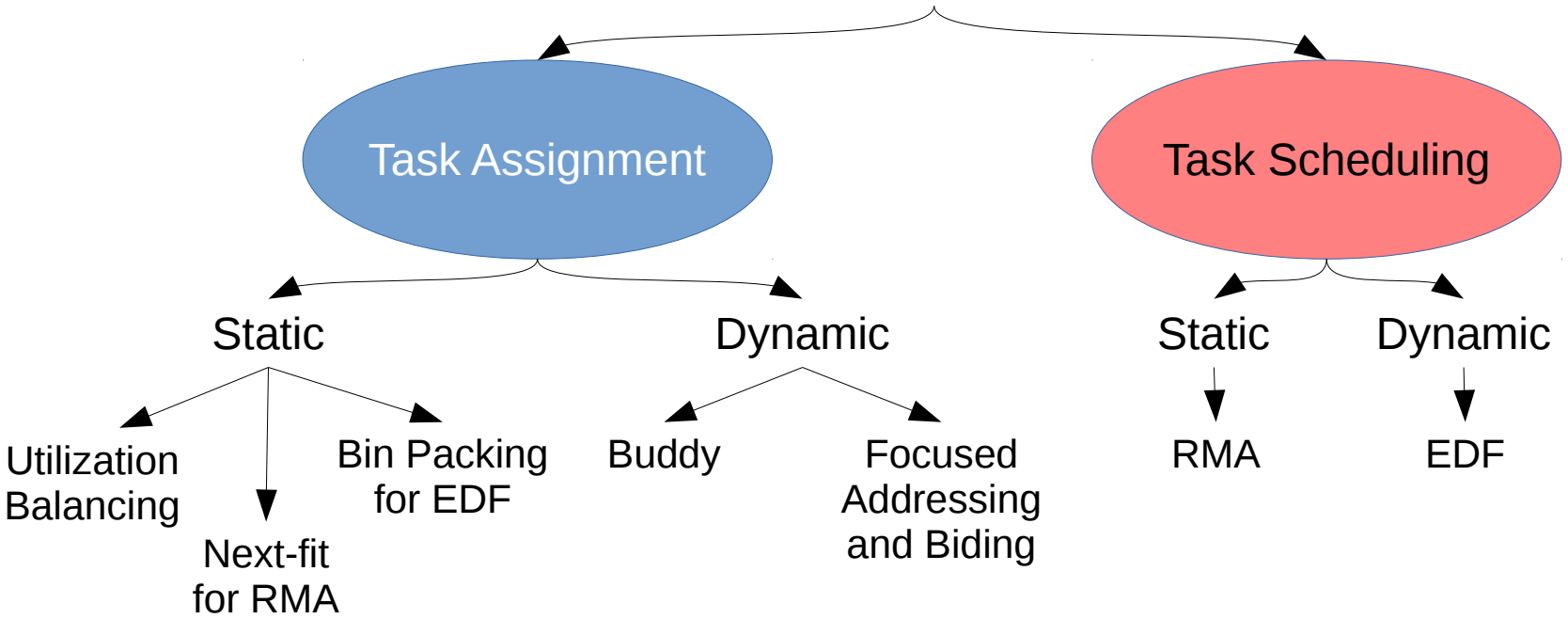

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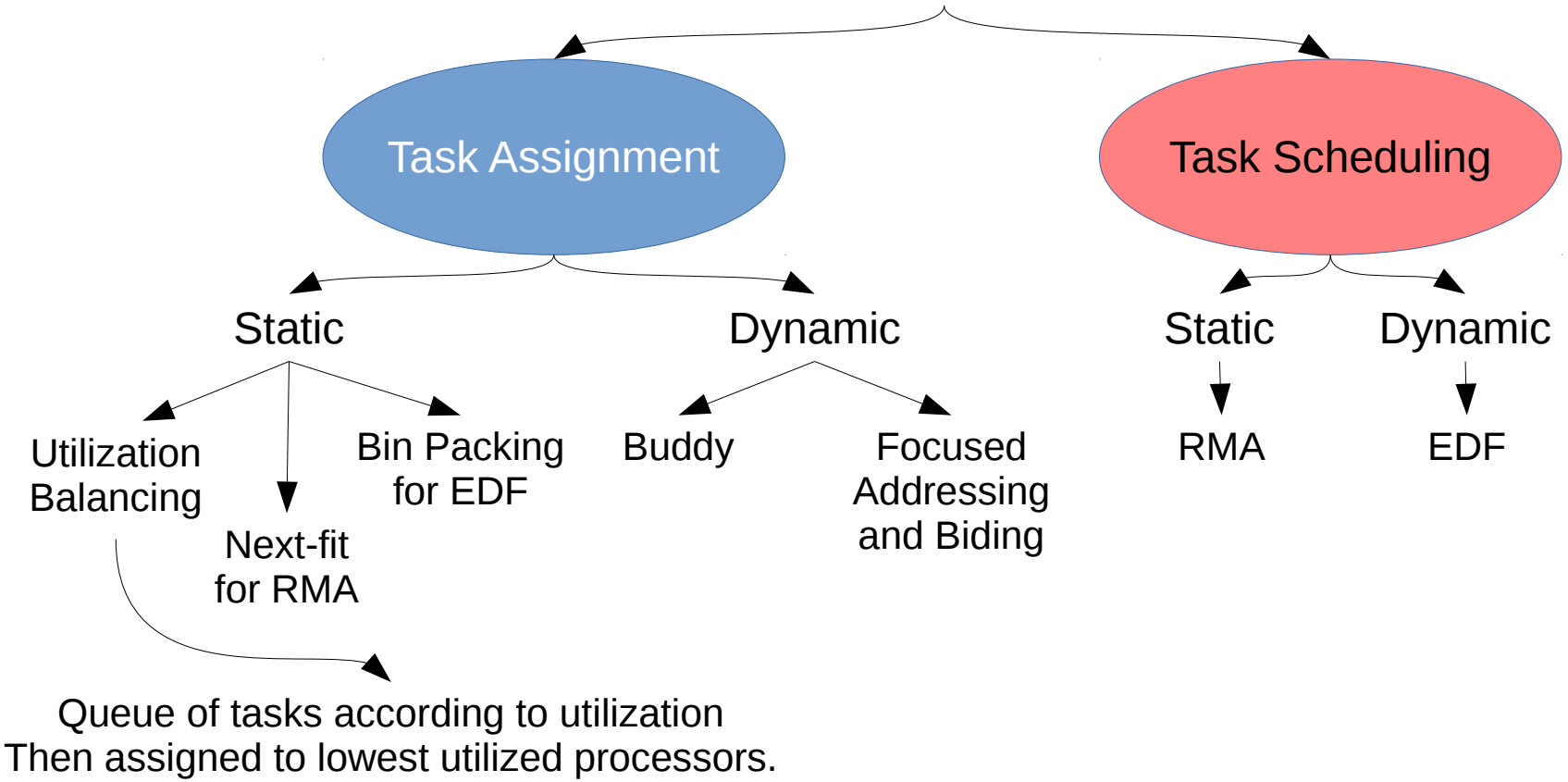

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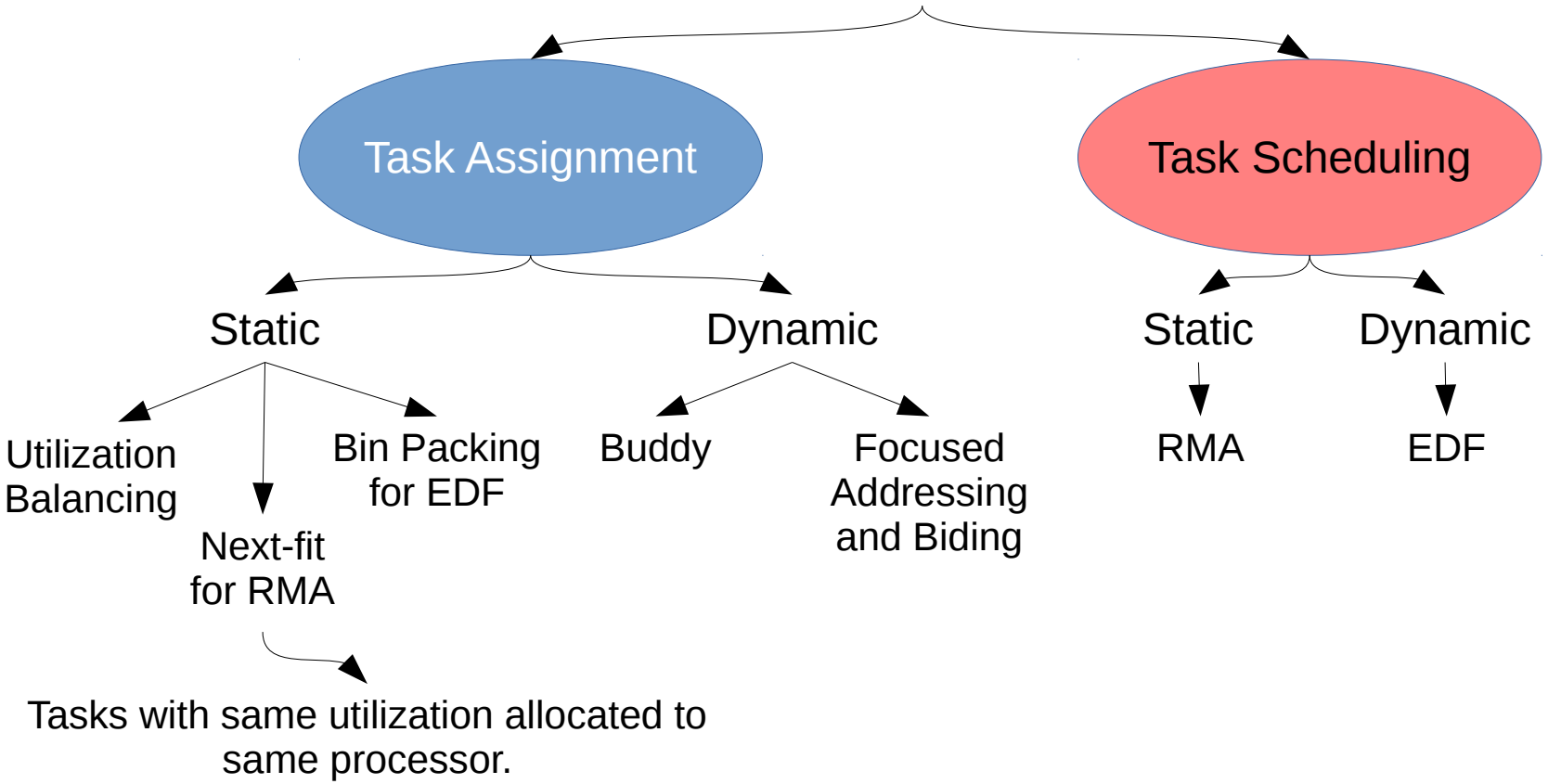

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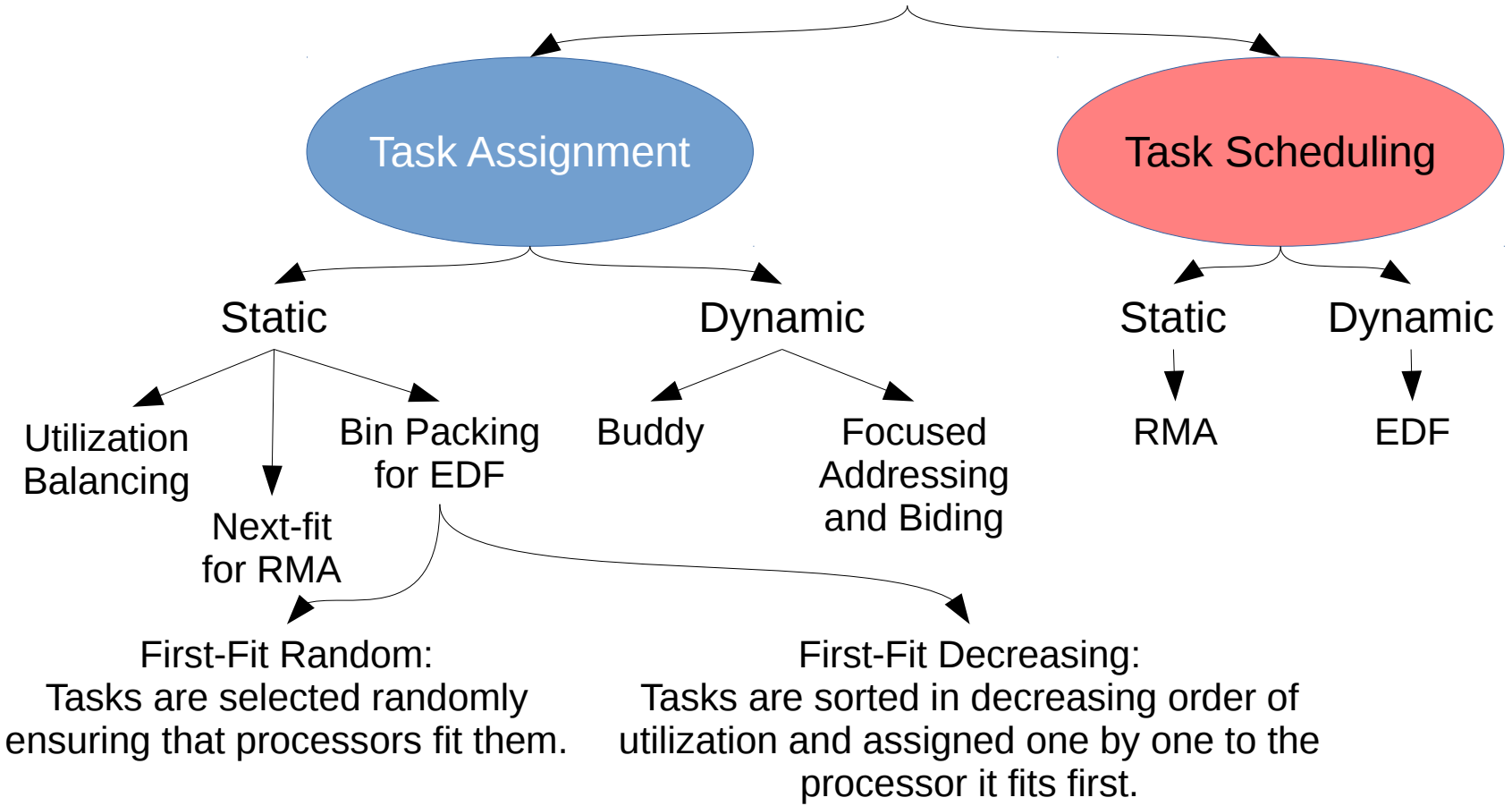

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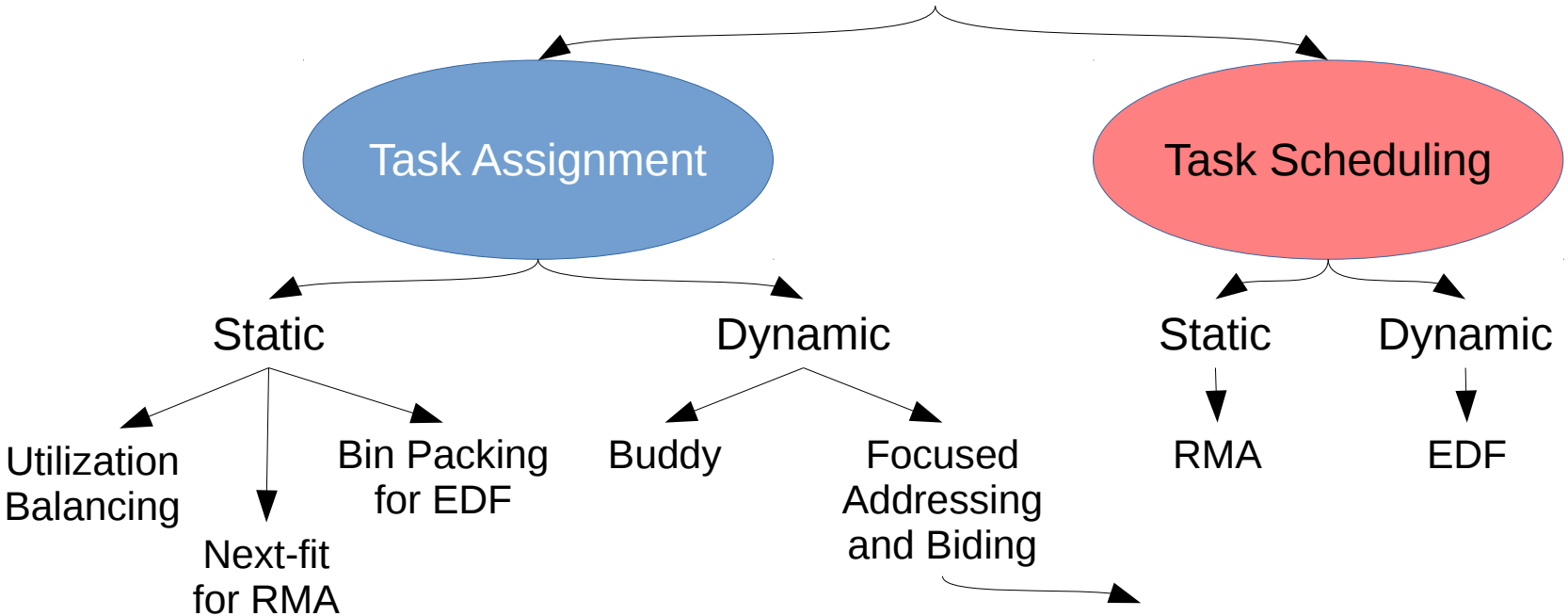
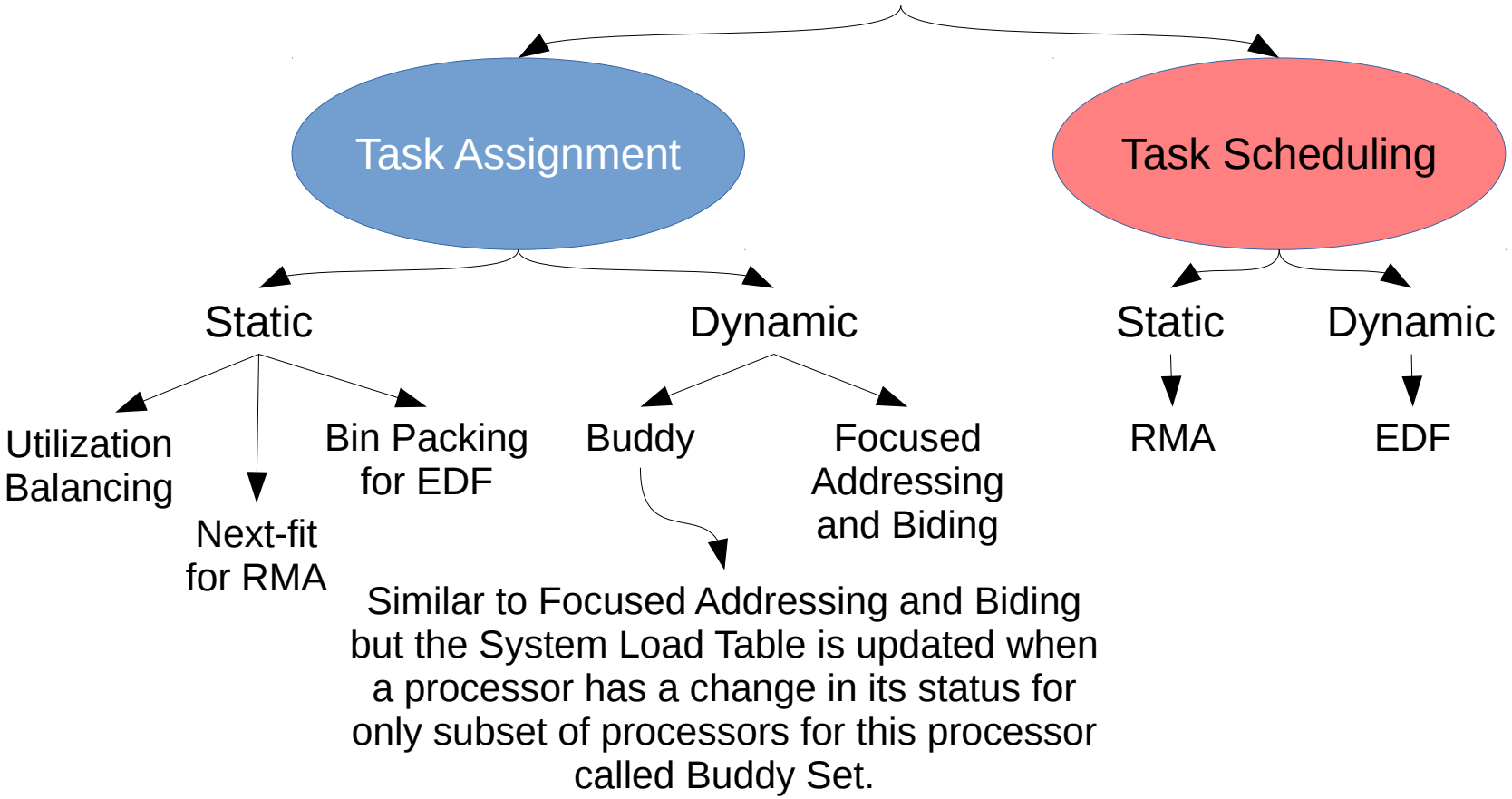


It uses 2 tables: (for each task the tables are used to determine its processor)

-Status Table (for each processor) → Indicates tasks assigned to a processor and their execution times.
-System Load Table (for all system processors) → Load information of all processors.

Task Allocation Algorithms



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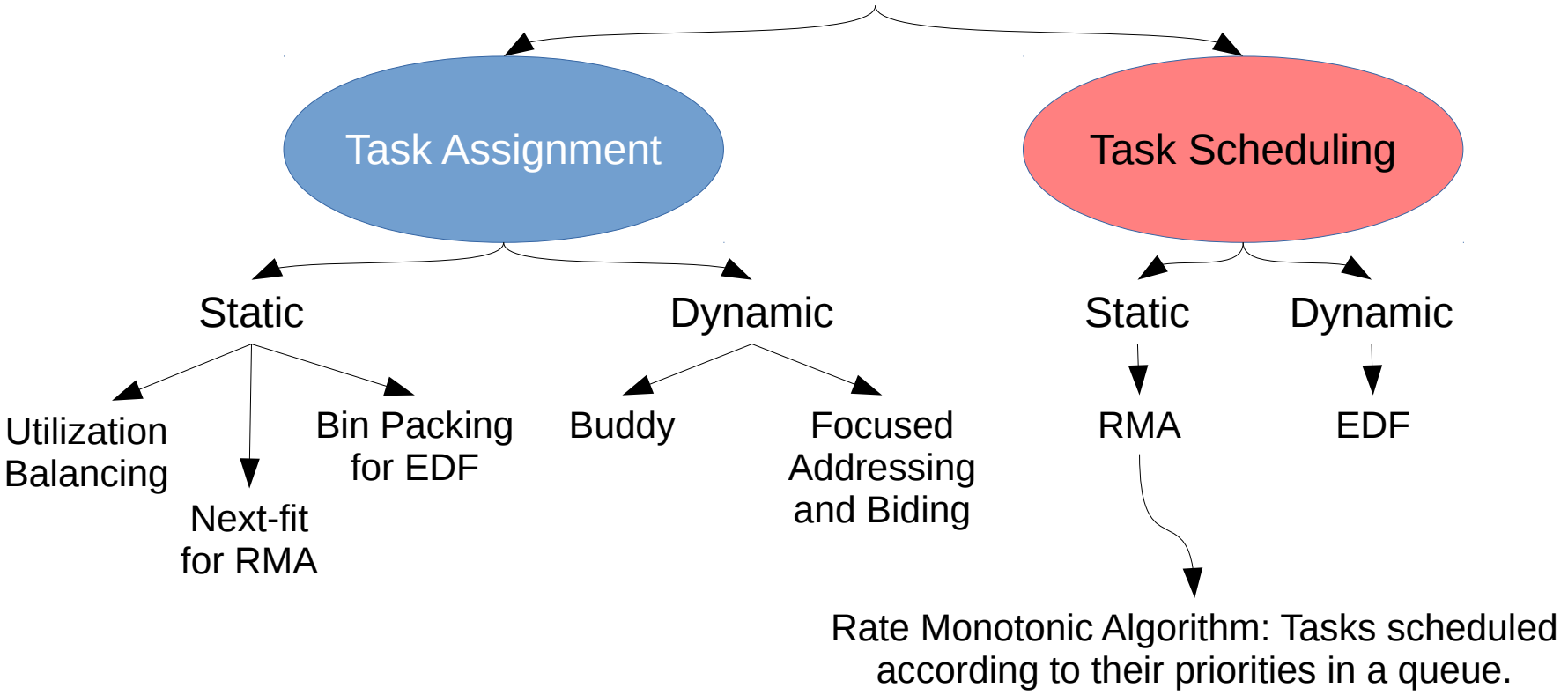

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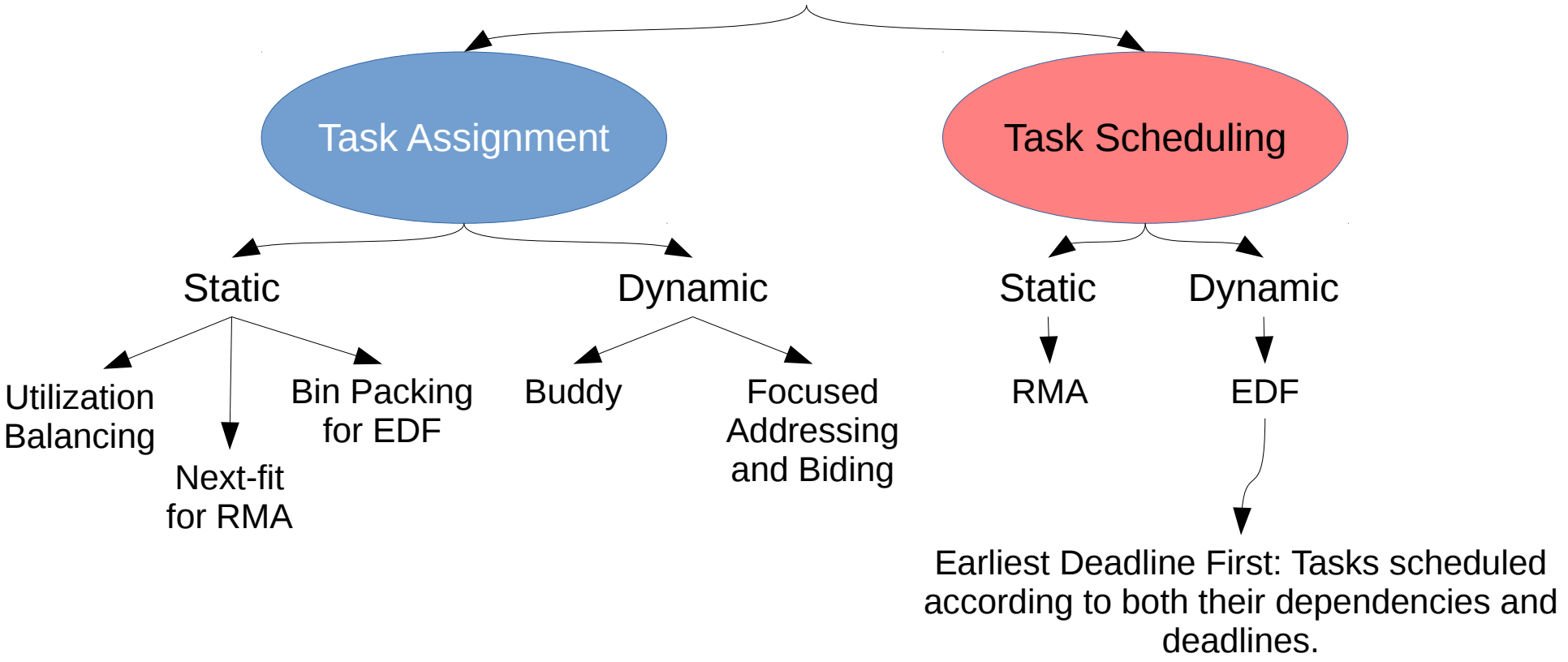

References

- Task allocation in Distributed computing VS distributed database systems: A Comparative study - Dr. Suchita Upadhyaya and Suman Lata.
- Real-Time Systems - Dr. Rajib Mall – A NPTEL Course.

Thanks